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Notes on the Distribution of Snakes
in
San Diego County, California

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Notes on the Distribution of Snakes in San Diego County, California

By L. M. KLAUBER

In the summer of 1922, the Zoological Society of San Diego completed the installation of a new reptile house as a part of its plant in Balboa Park, in the City of San Diego. By the winter of 1922-23 a moderate collection of snakes had been obtained, thereby increasing public interest. In the early spring, through appeals in the press and personal solicitation, the public was acquainted with the desirability of aiding in the capture of specimens, with the result that a total of 477 snakes were collected and recorded from San Diego County during the year 1923. Aside from snake hunts participated in by Zoo members, most of the specimens came from ranchers, campers, or auto picnickers.

From the collection secured, some interesting points are to be noted as to the frequency of occurrence and distribution of the local species. It is expected that a continuation of the collecting in future years will render the data more dependable and settle uncertain limits of range.

COUNTY ZONES

The climate and topography of San Diego County lend interest to a study of reptile distribution, owing to the wide variations within comparatively short distances. The altitudes range from sea level to a maximum of 6515 feet at Cuyamaca Peak. Temperatures are mild both summer and winter along the coast, while in the interior districts the winters are colder and the summers warmer. Eastward of the divide the winters are mild but the summers are exceedingly hot.

As to rainfall, this varies from an annual fall of about ten inches along the coast (San Diego 10.0 in., Oceanside 12.9 in.) and fifteen inches in the interior valleys (El Cajon 13.6 in., Escondido 16.4 in.), to twenty or thirty inches in the foothills (Campo 19.8 in., Mesa Grande 31.0 in.) and reaches a maximum of over fifty inches in the mountains (Palomar 50.3 in.). East of the divide the rainfall decreases rapidly, averaging less than three inches on the floor of the desert. Snowfall is usual in the mountains (Cuyamaca average 37.3 in.), not uncommon in the foothills, but rarely experienced elsewhere.

In considering distribution in so restricted a district as San Diego County, it appears desirable to subdivide the main life zones based on local conditions. In this area the coast and foothills are generally considered Upper Sonoran, while the inland valleys and the desert fall within the Lower Sonoran classification.*

*F. Stephens classifies the life zones in San Diego County as follows:

Near the ocean shore—high Upper Sonoran.

Inland valleys and mesas—low Upper Sonoran to high Lower Sonoran.

Foothills, 1,000 ft. to 2,000 ft.—low Upper Sonoran.

2,000 ft. to 3,500 ft.—high Upper Sonoran.

Mountains, 3,500 ft. to 4,500 ft.—variable; high Upper Sonoran or Transition according to slope, exposure, etc.

4,500 ft. and above—Transition.

Eastern Slope, 2,500 ft. to 4,000 ft.—high Upper Sonoran.

1,500 ft. to 2,500 ft.—low Upper Sonoran.

Desert Foothills, 500 ft. to 1500 ft.—high Lower Sonoran.

Desert, below 500 ft.—low Lower Sonoran.

However well suited these life zones may be to general classification, in this limited case, they combine areas having dissimilar climates, vegetation and topography and therefore the localities have been subdivided into the following six belts (see map):

Coast—The fog and high fog belt. Mild winters and summers (principally Upper Sonoran).

Inland Valleys and Mesas—Mild winters, warm summers (principally Lower Sonoran).

Foothills (Western Slope)—Areas between 1,000 and 4,000 feet in altitude. Cool winters, warm summers (Upper Sonoran).

Mountains—Areas above 4,000 feet. Cold winters, mild summers (largely Transition).

*Desert Foothills** (*Eastern Slope*)—Cool winters, hot summers (partly Upper, partly Lower Sonoran).

Desert—Below 1,000 feet. Mild winters, exceedingly hot summers (Lower Sonoran).

LIST OF SPECIES

The following is a list of snakes previously reported from San Diego County:* *

Siagonodon humilis (Baird and Girard). Western Worm Snake.

Lichanura roseofusca Cope. California Boa.

Diadophis amabilis similis Blanchard. San Diegan Ring-neck Snake.

Coluber constrictor mormon (Baird and Girard). Western Yellow-bellied Racer.

Coluber flagellum piceus (Cope). Red Racer.

Coluber lateralis (Hallowell). California Striped Racer.

Salvadora hexalepis (Cope). Western Patch-nosed Snake.

Arizona elegans occidentalis Blanchard. Western Faded Snake.

Pituophis catenifer annectens (Baird and Girard). San Diegan Gopher Snake.

Lampropeltis californiae californiae (Blainville). California King Snake.

Lampropeltis getulus boylii (Baird and Girard). Boyle's King Snake.

Lampropeltis multicincta (Yarrow). Coral King Snake.

Rhinocheilus lecontei Baird and Girard. Long-nosed Snake.

Sonora occipitalis (Hallowell). Tricolor Ground Snake.

Hypsiglena ochrorhynchus ochrorhynchus (Cope). Spotted Night Snake.

Thamnophis ordinoides hammondii (Kennicott). California Garter Snake.

Tantilla eiseni Stejneger. California Tantilla.

Crotalus cerastes Hallowell. Sidewinder.

Crotalus exsul Garman. Red Diamond Rattlesnake.

Crotalus mitchellii (Cope). Pallid Rattlesnake.

Crotalus oreganus Holbrook. Pacific Rattlesnake.

*Contain some isolated valleys which are typically desert.

* *Popular names are those generally used in San Diego County. As there is only one Gopher, one Garter, one Worm snake, etc., found locally, such words as "San Diegan", "California", "Western", etc. are generally omitted in popular descriptions.

To this list it now becomes necessary to add, based on specimens taken in the spring of 1924,

Phyllorhynchus decurtatus (Cope). Lower California Leaf-nosed snake, and

Trimorphodon vandenburghi, new species. Brown Lyre Snake, a description of which appears elsewhere in these notes.

This brings the number of species reported from San Diego County to twenty-three.

TABULATION OF DATA:

The total number of snakes brought in during the year 1923, from San Diego County was 477. The distribution of specimens as to dates and locations as indicated by this collection, has been summarized in two tables. Table I gives a segregation of the specimens by months and in the order of frequency of occurrence and is based on the 1923 record only; Table II lists the specimens by zones, and includes all specimens collected between January 1, 1923 and June 1, 1924.

Table I—List of Snakes in Order of Specimens Taken—1923

No.	Species.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1.	<i>Thamnophis ordinoides</i>													
	<i>hammondi</i>	3	3	3	6	23	22	52	6	4	1	..	..	123
2.	<i>Pituophis catenifer</i>													
	<i>annectens</i>	2	3	5	15	35	16	4	5	4	4	1	..	94
3.	<i>Lampropeltis getulus</i>													
	<i>boylii</i>		2	1	6	21	9	11	3	1	..	1	..	55
4.	<i>Crotalus oreganus</i>	1	..	3	11	5	2	14	5	..	4	..	..	45
5.	<i>Lampropeltis californiae</i>													
	<i>californiae</i>		..	1	7	11	7	3	2	2	..	..	..	33
6.	<i>Crotalus exsul</i>		1	1	4	7	4	2	6	6	2	..	..	33
7.	<i>Diadophis amabilis similis</i> ..		1	2	4	8	2	2	1	3	..	..	..	23
8.	<i>Coluber lateralis</i>		..	1	1	5	1	2	6	2	1	..	..	19
9.	<i>Lichanura roseofusca</i>		..	1	2	4	5	2	..	..	..	..	..	14
10.	<i>Coluber flagellum piceus</i> . ..		..	..	2	1	6	..	..	1	..	..	..	10
11.	<i>Crotalus mitchellii</i>		..	..	1	3	..	2	..	1	..	..	..	7
12.	<i>Hypsiglena ochrorhynchus</i>													
	<i>ochrorhynchus</i>		..	1	1	..	..	..	2	1	..	..	..	5
13.	<i>Siagonodon humilis</i>		..	..	1	3	..	1	..	..	..	..	..	5
14.	<i>Lampropeltis multicincta</i> ..		..	..	..	..	2	..	1	..	..	..	..	3
15.	<i>Rhinocheilus lecontei</i>		..	..	..	2	1	..	..	..	..	..	..	3
16.	<i>Sonora occipitalis</i>	2	..	..	..	..	..	..	..	..	..	..	..	2
17.	<i>Coluber constrictor</i>													
	<i>mormon</i>		..	..	..	1	..	1	..	..	..	..	..	2
18.	<i>Salvadora hexalepis</i>		..	..	..	..	1	..	..	..	..	..	..	1
19.	<i>Crotalus cerastes</i>		..	..	..	..	..	..	..	..	..	..	..	..
20.	<i>Arizona elegans occi-</i>													
	<i>dentalis</i>		..	..	..	..	..	..	..	..	..	..	..	..
21.	<i>Tantilla eiseni</i>		..	..	..	..	..	..	..	..	..	..	..	..
22.	<i>Trimorphodon vanden-</i>													
	<i>burghi</i>		..	..	..	..	..	..	..	..	..	..	..	..
23.	<i>Phyllorhynchus</i>													
	<i>decurtatus</i>		..	..	..	..	..	..	..	..	..	..	..	..
	Total	8	10	19	61	129	78	96	37	25	12	2	..	477

Table II—*Distribution of Specimens by Zones*
1923 Collection in Roman; Jan. 1 to June 1, 1924, Collection in Italics.

SPECIES	Inland Valleys and Mesas		Foothills, Western Slope		Foothills, Desert Slope		Desert	Total
	Coast				Mountains			
1. Siagonodon humilis	1	1	1	2	2	..	..	5
2. Lichanura roseofusca	2	5	5	3	..	..	..	14
3. Diadophis amabilis similis.....	17	2	3	2	..	..	..	22
4. Coluber constrictor mormon.....	..	2	..	..	1	..	..	2
5. Coluber flagellum piceus.....	7	2	1	..	..	..	..	10
6. Coluber lateralis	12	3	1	6	..	1	..	16
7. Salvadora hexalepis	..	..	..	2	..	..	..	2
8. Phyllorhynchus decurtatus	..	..	..	..	..	1	..	1
9. Arizona elegans occidentalis.....	..	..	..	..	..	..	..	..
10. Pituophis catenifer annectens.....	54	16	18	12	3	1	..	91
11. Lampropeltis californiae californiae.....	20	6	5	3	1	..	..	33
12. Lampropeltis getulus boylii.....	30	14	6	5	2	..	..	52
13. Lampropeltis multicincta	..	..	..	..	3	..	..	3
14. Rhinocheilus lecontei	2	..	1	2	..	..	..	3
15. Sonora occipitalis	..	..	..	..	..	2	..	2
16. Hypsiglena ochrorhynchus ochrorhynchus..	3	..	..	1	..	..	..	3
17. Thamnophis ordinoides hammondi	83	22	13	4	2	1	..	120
18. Tantilla eiseni	..	..	..	..	..	..	..	..
19. Trimorphodon vandenburghi	..	..	..	1	..	..	..	1
20. Crotalus cerastes	..	..	..	..	..	..	..	..
21. Crotalus exsul	11	9	9	9	1	1	..	31
22. Crotalus mitchellii	..	1	4	2	1	1	..	7
23. Crotalus oreganus	23	6	3	6	2	3	..	37
	265	89	70	60	17	10	..	451
	145	49	49	4	4	8	..	266

The discrepancy between the totals of Tables I and II is accounted for by the fact that the localities of twenty-six specimens were not listed with trustworthy accuracy and while known to be from San Diego County, must be omitted from Table II. In general, the log of the incoming specimens was kept with care. Fortunately there is only one case in which the diagnosis of San Diego County specimens is not apparent on a relatively superficial examination. This is the differentiation between juvenile specimens of *Crotalus exsul* and *Crotalus oreganus*, which are much alike in coloration.*

It might be well to note, as having a possible effect on the number and time distribution of specimens taken, that the winter of 1922-23 was subnormal in rainfall, the total for San Diego being 6.36 inches against a normal of 10.01. Other districts in the county probably fared proportionately. During the year 1923 at San Diego, rains in excess of 0.1 in. precipitation occurred on the following dates: January 24, 26, 30, 31; February 1, 8, 11; March 3; April 1, 6, 18; October 7; November 30; December 1, 19, 26, 27 and 29.

FREQUENCY OF OCCURRENCE—(See Table I):

It is not claimed that this single year's collection gives more than a general indication of the relative frequency of occurrence of species.

Collecting conditions tend to increase the number of some species taken and decrease others. The species to be expected east of the divide are not fairly represented, as so much of that territory is inaccessible. There is but one main travelled highway east of the divide in the county, this being the short stretch of the San Diego-El Centro road passing through Buckman's, Boulevard, Jacumba and Mountain Spring. On the other hand, the species which are particularly plentiful in the district considered as San Diego City (this is only a part of the political area of the city) are necessarily brought in most frequently.

Referring to Table I, a few general remarks may be applicable.

It is doubted whether the garter snakes actually exceed the gopher snakes in number. The former are usually concentrated in accessible locations about reservoirs or streams and may be captured in groups. In fact if we eliminate the catch of garter snakes at a single pond near La Jolla, the gopher snakes take first place. The gopher snakes seem to be more evenly distributed throughout the territory. Some farmers being aware of their economic value, will not catch them nor permit their being removed from their land.

Such brightly colored and relatively slow moving snakes as the two larger king snakes are probably better represented in this list than their actual numbers deserve. On the other hand, because of the practice of many collectors, of killing rattlesnakes on sight they are probably under-represented. The racers, *Coluber flagellum piceus* and *C. lateralis*, especially the latter, are so difficult to catch alive that they must be considerably more numerous than this collection would indicate. The small snakes and particularly the nocturnal species such as *Hypsiglena ochrorhynchus ochrorhynchus*, or the burrowers, such as *Siagonodon humilis*, must be relatively more numerous than this table would imply. The desert species such as *Sonora occipitalis* and *Crotalus*

*We had the opportunity of examining recently two sets of *C. exsul* embryos and found them black, entirely lacking the reddish or yellowish coloration of the adults. But all black markings except the tail stripes faded rapidly in alcohol.

cerastes, are not fairly represented because of the inaccessibility of their ranges.

TIME OF OCCURRENCE:

The information on collection dates is useful as indicating when collecting is best in this territory.

During the year under investigation, May shows a decided peak in the collection curve. This is particularly true if we eliminate a single morning catch of garter snakes at the La Jolla pond which distorts the July figure. (See Fig. 1.)

It might be assumed that snakes are most plentiful in the spring and relatively rare in the summer largely because the hot summer days cause them to become nocturnal. Or it may be thought that the summer shortage is only apparent as the Sunday auto picnics which are so fruitful of specimens, are diverted from the warm valleys and foothills to the cooler beaches in summer. But the second curve of Fig. 1, which shows the snake catch in San Diego City readily disproves these

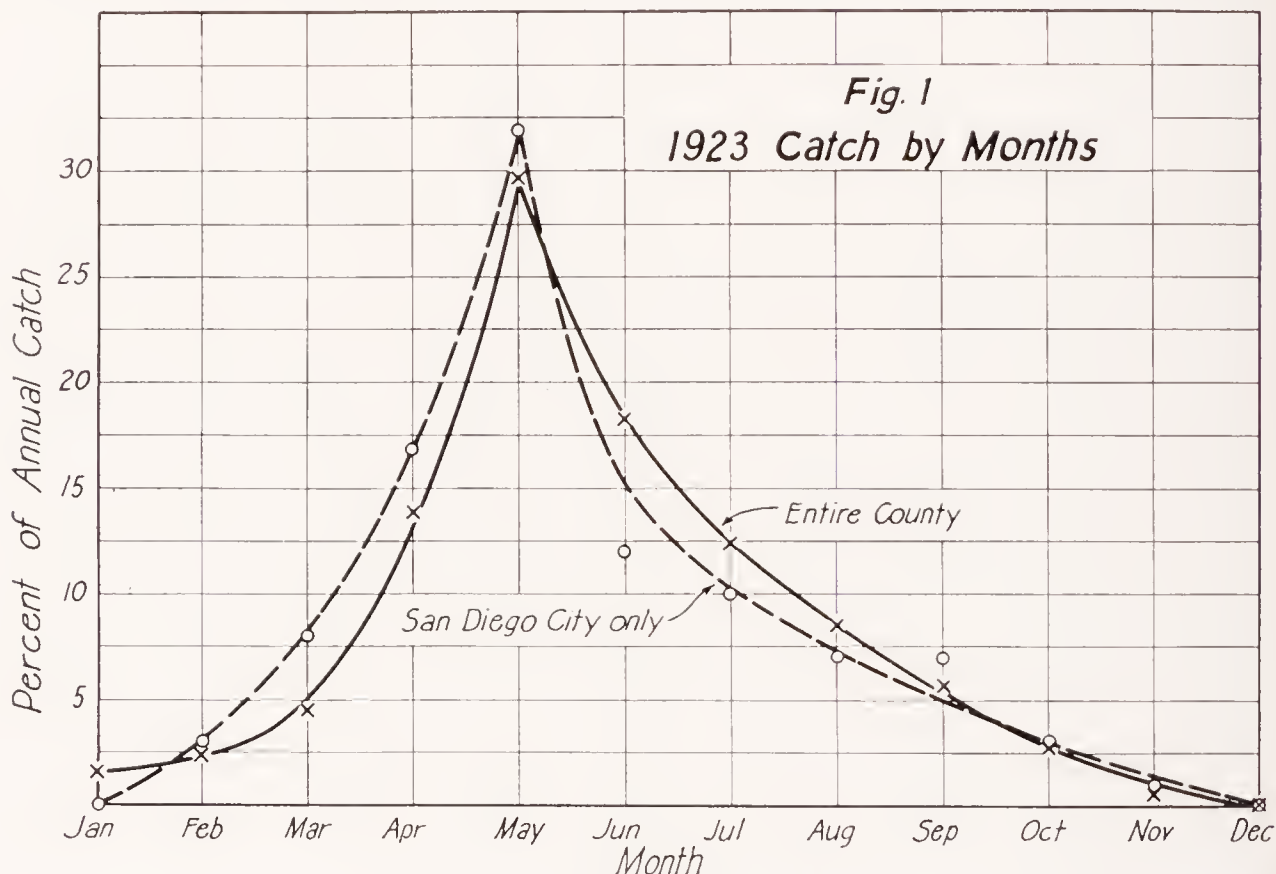


Figure 1. 1923 Catch by Months.

suppositions, for here again there is noted a sharp May peak, notwithstanding the fact that in this area the summer days are not hot and the snakes are not captured by picnic parties. It may be assumed that no temperature below 80° F. would cause snakes to become nocturnal, and at San Diego in 1923, during the months of June, July and August, the highest recorded temperature was 78° F., and the mean daily maximum was 70.5° F. Furthermore, although the snakes no doubt become nocturnal during the hot months on the desert and in the interior valleys, there is evident in our 1923 census, no increase in specimens during the fall from the latter localities when the temperatures of the spring months are again approximated. We therefore reach the conclusion that the heavy snake catch in the spring as compared with summer and autumn, is due to conditions of food, mating, or both.

It is to be regretted that from our collection we learned nothing of interest with reference to winter habits. Reports of snake dens were entirely unverified.* Juvenile specimens are taken in greater proportion in the late fall and spring, particularly in February and March as might be expected.

It will be noted from Table I that no species, reported in sufficient numbers to afford an indication of value, shows a distinct peak differing in time from the general average. That *Lampropeltis multicincta*, the only species evidently restricted to the Transition zone, came in late, is interesting. The finding of the only two specimens of *Sonora occipitalis* during January was accidental. There are some indications borne out by figures for the spring of 1924 that *Diadophis amabilis similis* comes out early while *Coluber flagellum piceus* is later than the general average.

DISTRIBUTION OF SPECIES IN LOCALITIES AND ZONES: (See Table II)

Table II gives the geographical distribution indicated by the 1923 collection and the 1924 collection to June 1.

In order to co-ordinate with our records the information heretofore published giving specific locations of San Diego County specimens, the literature available has been reviewed and the previously recorded localities together with our own determinations are listed by species in the notes which follow. The code letters A to T which follow the localities indicate the corresponding references in the bibliography. Only the oldest reference to each locality is given. The bibliography is restricted to articles which refer to definite San Diego County localities and a few additional publications having a particular interest in considering San Diego County distribution.

The locality record has been somewhat complicated by the fact that a part of what is now Riverside County, and all of Imperial County were once a part of San Diego County, so that many of the older published records do not refer to the area now under consideration. There are some references of a general nature, e. g. "Colorado Desert, San Diego County"; "Coast Range, San Diego County", which are not sufficiently definite to be of much value; these have been omitted in the lists which follow except in cases where they extend the recorded range to additional zones. There are also some old records listed as "San Diego" in which it is quite probable that some part of the county was meant rather than the city. Fortunately this is of importance in only one or two instances. Where possible the names of towns or localities no longer found on maps have been connected with or replaced by their modern equivalents. With reference to the localities listed from our Zoological Society records it should be understood that the names given represent districts rather than points. Specimens were recorded as coming from the nearest town to the actual point of collection, based on the information received from the collector.

Through the courtesy of Dr. John VanDenburgh, Curator of Herpetology of the California Academy of Sciences, San Francisco, Prof. Joseph Grinnell of the University of California, Prof. J. O. Snyder of Stanford University and Messrs. C. G. Abbott, Director and

*A surveying party reported six rattlesnakes (*Crotalus exsul*) in one heap of granite boulders in May.

Frank Stephens, Curator Emeritus of the San Diego Natural History Society, I have had access to the records and collections of the respective museums of those institutions. Also Dr. Leonhard Stejneger, Head Curator, Dept. of Biology of the Smithsonian Institution, has very kindly furnished me with a list of the San Diego County specimens in the United States National Museum. From these collections I have secured a large number of San Diego County locality records, some of which are not found in previous publications nor the collection of the Zoological Society. Such museum specimens are indicated by the following code letters:

University of California—U.
 Stanford University—V.
 United States National Museum—W.
 California Academy of Sciences—X.
 San Diego Natural History Museum—Y.

As in the case of localities recorded in the literature, specimens in museums from indefinite locations have not been listed unless from zones in which no specific locations have been reported.

Our San Diego Zoological Society records are indicated by the letter Z. These records include several from our 1922 collection and a number of advance records from the Spring of 1924. The 1922 collection was not recorded in sufficient detail to permit of comparisons of frequency and time of occurrence; nevertheless the localities not duplicated in 1923 are of interest.

Thus localities not followed by any of the code letters A to T inclusive, have not previously been reported.

SIAGONODON HUMILIS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Rancho Santa Fe (Z)	Sunnyside (Z)	Rincon (Z)
Del Mar (Z)		Valley Center (Z)
Ladrillo (S)		Viejas (Z)
(Rose Cañon)		
San Diego (Z)		
<i>Mountains</i>	<i>Desert Foothills</i>	<i>Desert</i>
Palomar (X, Z)	Banner (O, Y)	Vallecito (A)
		(Type Locality)

Siagonodon humilis, although poorly represented in number of specimens, was found in 1923 in every zone west of the divide; thus, with the former records, indicating a distribution in every zone in the county. The Palomar specimens were taken at the west end of the ridge. Our Zoological Society specimens were all located in the course of excavations,* except one which was found in a crack between a flake of granite and the parent boulder (July 8th, near Viejas, at elevation 3000). Thus, our records, together with that of VanDemburgh (1922) at Ladrillo Station (Rose Canon), would tend to disprove the opinion formerly held that the Western worm snake is exclusively a desert species and a Lower Sonoran life-zone indicator.** Nor is it thought that this snake is really rare; since it is infrequently taken except in excavations, it is only natural that collectors should seldom come upon it. However, it is noted that *Anniella pulchra* seems to be far more common in this district than *Siagonodon humilis*.

*Three specimens were located in digging out the rotted butt of a fence post (1922 collection).

**Hall and Grinnell (1919), p. 48; Stephens (1921), p. 63.

The former is generally found in sandy soils, while the worm snake apparently prefers clay, adobe, or rocky situations.

LICHANURA ROSEOFUSCA

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Santa Fe Ranch (Z)	Bonsall (I, V, X, Z)	Rincon (Z)
Grantville (Z)	Lakeside (Z)	Valley Center (Z)
Mission Valley (Z)	Santee (Y, Z)	Witch Creek (J, W)
San Diego (D, W)	El Cajon (Z)	Ballena (Z)
San Ysidro (X, Z)	Jamacha (Z)	Descanso (X, Z)
		Japatul (Z)
		Glen Lonely (Z)
		Barrett Dam (Z)
		Dulzura (N, U, Z)
		Cottonwood (Z)
<i>Desert Foothills</i>	<i>Desert</i>	
La Puerta (**)	Colorado Desert (W)	
Boulevard (Z)		
Jacumba (Z)		

Lichanura roseofusca, while more often recorded from the inland mesas and foothills, is also noted from the coast areas. Although we secured none from the desert, it had been reported previously† from the general locality of the "Colorado Desert, San Diego County" which may now be either San Diego or Imperial County. Both of the Santee specimens were taken at the Old Mission Dam to the west of the town.

The boas are tame and make good pets, except that they do not feed well in captivity; they do not attempt to escape even when first captured, and none of our specimens ever tried to bite. One was found near Glen Lonely, April 15th, 1923, braced in a vertical position between two granite boulders, immediately above and evidently watching a wood-rat's nest. A second was found coiled and wedged tightly in a fissure.

DIADOPHIS AMABILIS SIMILIS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Between Carlsbad and	Poway (S)	Warners (Y)
Oceanside (I, V)	Murray Dam (Y)	Santa Ysabel (Y)
La Jolla (Z)	Dehesa (Z)	Witch Creek (J, W)
Chollas Heights (Z)	La Mesa (Z)	Ballena (X, Z)
San Diego (G, Y, Z)		Ramona (Z)
(Type Locality)		Jamul (Z)
Point Loma (Y)		Potrero (Z)
Chula Vista (Y, Z)		

Diadophis amabilis similis is quite common in Balboa Park, which accounts for a large proportion of the specimens secured in 1923. However, sufficient additional individuals have been taken to show a distribution in the valley and foothill zones. I find no record of any taken on the eastern slope in this county, and we secured none from the mountain areas.

A very young specimen was noted as differing materially in coloration from the adults, as the dorsal color was black throughout (not differing from the head coloration as in the adults) and the ring was a brilliant coral red. An unusually large specimen (for this district) was found to measure 15 in. (381 mm) in length.

**Authority of Frank Stephens who observed one at the lower end of the valley but did not collect it.

†Stejneger (1889), p. 96. C. R. Orcutt writes me the type specimen of *L. orcutti* was taken east of Jacumba.

COLUBER CONSTRICTOR MORMON

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Orcutt (J, W)* (Grantville)	Escondido (Z)	Agua Caliente (I, V) Witch Creek (Y)
	<i>Mountains</i>	
	Cuyamaca (Z)	

Coluber constrictor mormon seems to have been collected previous to 1923 from three localities in this county. The Witch Creek specimen was taken August 4th, 1893, but has not been reported before. It was found in a brick reservoir temporarily dry. Both our 1923 specimens were taken at the same street corner in Escondido, but in different months. This snake seems to be uncommon in this county, but is apparently distributed in all zones west of the divide. The Cuyamaca specimen was taken May 31, 1924, at elevation 4610.

COLUBER FLAGELLUM PICEUS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Las Flores (Z)	Pala (Z)	Agua Caliente (I, V)
Rancho Santa Fe (Z)	Escondido (Z)	Rincon (Z)
La Jolla (Z)	El Cajon (Z)	Warners (W)
Mission Valley (Z)		Potrero (Z)
San Diego (I, U, V, W, Z)	<i>Desert Foothills</i>	Campo (S, X)
Point Loma (W, Y)	San Felipe Valley (S, U)	
Coronado (Z)	La Puerta (Y)	
Chula Vista (Z)	Mountain Spring (F, W)	<i>Desert</i>
Monument (J)	Jacumba (J)	Carrizo (U)

Our collection of *Coluber flagellum piceus* in 1923, was not particularly good, either in numbers or distribution. There is some indication that these snakes come out later than other species; in 1924 no specimen was reported prior to May 28th.

The red racer is sometimes considered a typically Lower Sonoran species, * * but in San Diego County it seems to range throughout the Upper Sonoran zone as well.

A juvenile specimen from Coronado is worthy of note, especially as this was the only snake taken on that part of the peninsula during 1923. We secured no specimens from the eastern foothills or the desert, but the previous records show it to occur in these zones. All of our 1923 specimens from San Diego County were of the typical red coloration. From Lower California we got two of the black phase (from near Ensenada) and two yellow specimens from near Tijuana. A yellow specimen was taken at El Cajon, May 30, 1924.

A specimen taken near La Jolla when driven toward a pond, took refuge in the reeds, two feet or more above the water surface; thus indicating a disinclination to take to water. The rapidity with which these snakes can move when alarmed, is astonishing. One cornered in a bush and carefully surrounded by the collecting party, escaped to a neighboring bush without being observed, although later captured in the other bush. These snakes usually bite fiercely when first taken.

*Cope (1900) p. 797 lists U. S. N. M. Cat. No. 16354 as from San Diego, but Dr. Stejneger in a recent communication gives the locality as near Orcutt.

**Hall and Grinnell, (1919) p. 48.

COLUBER LATERALIS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Encinitas (Z)	Escondido (Z)	Oak Grove (I, V)
Torrey Pines (Z)	Poway (S, Z)	Agua Caliente (I, V)
La Jolla (Z)	Mussey (Z)	Santa Ysabel (F, W)
Rosedale (Z)	Flynn Springs (Z)	Witch Creek (S, U, Y)
Mission Valley (Z)	Lakeview (Z)	Ramona (Z)
Chollas Heights (Z)	Dehesa (Z)	Wildwood (Z)
San Diego (J, V, W, Y, Z)	Sweetwater Dam (W)	Glen Lonely (Z)
Point Loma (Y)		Dulzura (N, U, Z)
National City (Z)		Potrero (Z)
Chula Vista (S, U)	<i>Desert Foothills</i>	Campo (S, X, Z)
	Boulevard (Z)	Tecate (Z)

Coluber lateralis is more plentiful and with a wider distribution than our collection would indicate. This is a difficult snake to capture alive, for while it is not so quick, nor its rushes so frantic as the red racer, its neutral coloration, and the fact that it is usually found in rocky or brushy situations where escape is easy, render it hard to catch. This snake has a way of escaping into a pile of rocks or brush and then watching the intruder with only its head exposed. In such cases it may be shot but not snared alive. Out of six specimens seen on two hunts not one was captured. We consider this one of the most plentiful snakes in the western part of the county.

SALVADORA HEXALEPIS

<i>Coast</i>	<i>Foothills—Western</i>
Rancho Santa Fe (Z)	Santa Ysabel (Y)
San Diego (J, W)	Viejas (I)
	Glen Lonely (Z)
	Dulzura (Z)
	Campo (S, X)

Salvadora hexalepis is represented in our 1923 collection by a single specimen, the locality of which could not be determined with certainty, although it was probably Ramona. In 1922 we had a juvenile specimen, taken October 13th, at Rancho Santa Fe. As this snake has been taken in Imperial County, we may expect to find it on the eastern slope. It seems to be uncommon.

PHYLLORHYNCHUS DECURTATUS

Desert Foothills
San Felipe (Z)

What is apparently the sixth recorded specimen of this rare snake I found dead in the roadway in San Felipe Valley (elev. 2420) on May 31, 1924. The specimen was quite fresh evidently having been struck by a passing auto but a short time previously.

The description of this specimen follows: Adult male, length 394 mm., length of tail 51 mm., ratio of tail to total length .077. Scale rows 19-17. Ventrals 172, anal entire, caudals 32 pairs.

Supralabials seven, the fifth largest; infralabials eight, the first and fifth largest. The loreal is present with two small sublores. There are two preoculars, two suboculars and two (right) three (left) postoculars. The temporals are 2+3 (right) and 1+3 (left). The dorsal scales are distinctly keeled except for about 50 mm. behind the head.* The brown body blotches, which are about seven scales wide, number 34 plus 6 on the tail, a total of 40. The ground color between the blotches is pink (this faded rapidly in alcohol). The

*See Van Denburgh, (1922) p. 692; Schmidt, (1922) p. 685.

ground color on the sides is brown, this color being produced by fine dots, except on the edges of the scales which are white. On the sides there is a smaller series of blotches alternating with the dorsal series, and below this a third somewhat incomplete series is present. The under surface is white. On the head there is a dark band across the anterior portion of the frontal which continues down and back across the eyes to the angle of the mouth. There is a single brown spot back of the parietals.

ARIZONA ELEGANS OCCIDENTALIS

<i>Coast</i>	<i>Foothills—Western</i>	<i>Desert Foothills</i>
Between Oceanside and Carlsbad (I, V)	Warners (G)	La Puerta (Y)
La Jolla (T, W)	Campo (S, X)	Jacumba (X)
(Type Locality)		
Pacific Beach (J, W)		
San Diego (T, W)		<i>Desert</i>
Tia Juana (T, W)		Vallecito (N, U)

In addition to these records there is one which cannot be allocated to a specific zone, i. e., Coast Range, West Slope, San Diego Wagon Road (J).

Of *Arizona elegans occidentalis* we have secured not a single specimen from San Diego County since our collecting began. Captive specimens from Texas show this snake to be a consistent burrower, which may explain its apparent rarity. Frank Stephens informs me that the La Puerta specimen in the San Diego Museum of Natural History was ploughed out February 10th, 1923.

PITUOPHIS CATENIFER ANNECTENS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Oceanside (W, Z)	Fallbrook (Z)	Pauma (Z)
Rancho Santa Fe (W, Z)	Pala (Y, Z)	Agua Caliente (Q, V)
Del Mar (Z)	Bonsall (Z)	Rincon (Z)
Torrey Pines (Z)	Vista (X, Z)	Warners (Q, U)
Linda Vista (Z)	San Marcos (X, Z)	Valley Center (Z)
La Jolla (Z)	Richland (Z)	Mesa Grande (Z)
Rosedale (Z)	Escondido (X, Z)	Santa Ysabel (X, Y, Z)
Pacific Beach (Z)	Bernardo (Z)	Wynola (X, Z)
Orcutt (J)	Poway (Z)	Witch Creek (J, W)
(Grantville)	Mussey (Z)	Ramona (Z)
Mission Valley (Z)	Miramar (Z)	Boulder Creek (Z)
Chollas Heights (Z)	Lakeside (Z)	Oakzanita (X, Z)
San Diego (A, W, Z)	Flynn Springs (Z)	Descanso (Z)
(Type Locality)	Santee (Z)	Pine Valley (Z)
Encanto (Z)	El Cajon (Z)	Japatul (Z)
Point Loma (Z)	Dehesa (Z)	Glen Lonely (Z)
North Island (Z)	La Mesa (Z)	Lyons Valley (Z)
National City (Z)	Lemon Grove (Z)	Jamul (Z)
Chula Vista (Z)	Otay Dam (Z)	Barrett Dam (Z)
Nestor (Z)		Dulzura (Z)
<i>Mountains</i>		Cottonwood (Z)
Julian (Q, U, X, Z)		Potrero (Z)
Pine Hills (Z)	<i>Desert Foothills</i>	Campo (Q, X)
Cuyamaca (Q, U, X, Z)	La Puerta (Y)	Tecate (Z)
Campbell's Ranch (J)	Boulevard (Z)	
(Laguna)		

Pituophis catenifer annectens seems well distributed in all areas west of the desert and shares with the garter snake the distinction of being our commonest snake. Lack of specimens from the eastern slope may

be due to want of collecting in that vicinity. There was no opportunity to examine the specimens brought to the Zoological Garden in 1923 to determine whether any would fall within the classification *P. c. deserticola*, but from the localities recorded all presumably would be *P. c. annectens*. Two specimens from La Puerta in the collection of the San Diego Natural History Society fall within the *P. c. annectens* rather than the *P. c. deserticola* classification based on the key given by Van Denburgh (1920) p. 12. *P. c. deserticola* being reported from Imperial County may be expected from extreme desert localities in San Diego County.

LAMPROPELTIS CALIFORNIAE CALIFORNIAE

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Carlsbad (II,V)	Vista (Z)	Rainbow (Z)
San Dieguito Valley (R, W) (Rancho Santa Fe)	Poway (S, Z)	Valley Center (Z)
Del Mar (Z)	Miramar (Z)	Mesa Grande (Z)
Torrey Pines (Z)	El Cajon (Z)	Santa Ysabel (R, Y, Z)
Sorrento (II, X, Z)	La Mesa (R, W)	Witch Creek (J, W)
Pacific Beach (Z)	Jamacha (Z)	Ramona (Z)
Orcutt (R, W, Z)	Lemon Grove (Z)	Wildwood (Z)
(Grantville)	Otay Dam (Z)	Boulder Creek (Z)
Mission Valley (Z)		Japatul (Z)
Chollas Heights (Z)		Jamul (Z)
San Diego (R, X, W, Z)		Dulzura (N, U)
Point Loma (R, W, Z)		Campo (R, X)
Paradise Valley (Z)	<i>Mountains</i>	
National City (Z)	Julian (N, U)	<i>Desert Foothills</i>
Chula Vista (Z)	Cuyamaca (II, Z)	Mountain Spring (Z)

Our collection of the king snakes, *Lampropeltis californiae californiae* and *L. getulus boylii* shows how widely distributed these species are, particularly west of the mountains. There is apparently small difference in the range of these snakes. Our collection and likewise previous records, would indicate *L. g. boylii* somewhat more numerous than *L. c. californiae* but not materially so. Both are quite plentiful in Balboa Park and other parts of San Diego, and occur through the valleys and foothills into the mountains and beyond. Our specimen of *L. c. californiae* from Mountain Spring is of interest as extending the recorded range east to the edge of the county but *L. g. boylii* had previously been recorded from the eastern slope and one desert locality. Neither species can be considered a life-zone indicator in this county.

Most of our specimens of *L. c. californiae* had the characteristic dorsal stripe unbroken except at the neck and tail, as is usual in the individuals from San Diego County. But one specimen having the mixed markings of *L. g. boylii* and *L. c. californiae** was taken in Balboa Park, San Diego, April 22, 1923. (Fig. 2.)

One specimen of *L. c. californiae* was taken which had eaten a mouse and a small gopher snake. Another caught in a chicken house disgorged a young chicken. A pair, both typical *L. c. californiae*, were found mating May 22nd, 1924.

*See Blanchard (1921), p. 96.



Figure 2. *Lampropeltis* with mixed markings of *L. c. californiae* and *L. g. boylii*.

LAMPROPELTIS GETULUS BOYLII

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Las Flores (X)	Fallbrook (R, Z)	Rincon (Z)
San Luis Rey (Z)	Santa Margarita (I)	Pamo (Z)
Cardiff (Z)	Bonsall (X, Z)	Ramona (Z)
San Dieguito Valley (R, W, Z)	Twin Oaks (R)	Glen Lonely (X, Z)
(Rancho Santa Fe)	Escondido (X, Z)	Buckman's (Z)
Del Mar (Z)	San Pasqual (X, Z)	Jamul (Z)
Linda Vista (Z)	Poway (S, X, Z)	Dulzura (X, Z)
La Jolla (X, Z)	Miramar (X)	Harvey Diverting Dam
Mission Valley (Z)	El Monte (Z)	(S. E. of Dulzura) (Z)
Chollas Heights (Z)	Lakeside (Z)	Potrero (X, Z)
San Diego (G, X, W, Z)	Dehesa (Z)	Campo (R, U, X, Z)
Encanto (Z)	Grossmont (Z)	
Paradise Valley (Z)	La Mesa (R, W, Z)	
National City (Z)	Spring Valley (Z)	
Otay (Z)	Jamacha (Z)	
Nestor (Z)	Lemon Grove (Z)	
San Ysidro (Z)	Sweetwater Dam (Z)	
	Otay Dam (Z)	
<i>Mountains</i>	<i>Desert Foothills</i>	<i>Desert</i>
Volcan (Y)	La Puerta (R, Y)	
Cuyamaca (Z)	5 mi. n. of Jacumba (Z)	
	Jacumba (R, W)	Vallecito (R, U)

It is to be regretted that we secured no additional specimens of *Lampropeltis getulus boylii* from the desert area or Imperial County and consequently are no nearer determining the area of intergradation with *L. g. yumensis* if such intergrading occurs. It is possibly significant that the specimens of *L. g. boylii* taken on the eastern slope outnumber those of *L. c. californiae* in greater ratio than applies elsewhere in the territory. Frank Stephens informs me that while *L. g. boylii* is not uncommon at La Puerta he has never seen *L. c. californiae* there.

LAMPROPELTIS MULTICINCTA

Mountains

Palomar (Z)
 Julian (Z)
 Pine Hills (Z)
 Cuyamaca (Z)

Thus far, our Zoological Garden specimens of *Lampropeltis multicincta* have come entirely from the Transition zone. There is a specimen (No. 4281) from the vicinity of San Diego in the Stanford Museum but the exact locality from which it came has not been recorded.

There is also a specimen (Cat. No. 13889) in the National Museum listed as being collected at San Diego but this is not improbably a case of indefinite locality, in reality indicating a point in the county rather than the city. Thus any one of the mountain districts might be meant.

These little king snakes show a greater disposition to bite than their larger relatives. When in captivity they spend much of their time in the branches of the bushes placed in the cage.

RHINOCHEILUS LECONTEI

Coast

Rancho Santa Fe (Z)
 Rosedale (Z)
 Mission Valley (Z)
 Chollas Heights (Z)
 San Diego (A, X)
 (Type Locality)
 Point Loma (Y)
 National City (Z)
 Bonita (Z)
 Chula Vista (Y)

Foothills—Western

Valley Center (Z)
 Descanso (X, Z)
 Hipass (Z)
 Campo (X)

Desert Foothills

Yaqui Well (Y)
 La Puerta (Y)

Rhinocheilus lecontei has been reported as common throughout the county*, but we have not found it so. However it appears to be well distributed from the mountains to the coast and as captive specimens almost invariably burrow, it may be present in larger numbers than our experience would indicate. We know little as to the eastern limit of its range in San Diego County and it does not appear to have been taken in Imperial County, although found in Arizona.

One specimen was taken which had just eaten a Whiptail Lizard.

SONORA OCCIPITALIS

Inland Valleys

Santee (W)

Desert Foothills

La Puerta (N, U, X,
 Y, Z)

Desert

Carrizo (N, U)

Two specimens of *Sonora occipitalis* from La Puerta are the only ones we have had thus far from this county although several have been brought in from Yuma, Arizona. Frank Stephens informs me that they are by no means uncommon at La Puerta where they are frequently ploughed out. From 1911 to 1913 he secured no less than eleven specimens. There is a specimen (No. 59465) in the U. S. National recorded from "San Diego River Valley." Dr. H. C. Kellers, who collected this specimen, writes me that it was taken in the dry bed of the river about ten miles east of the city. This would place it near Santee and would indicate that this species is not exclusively a desert type.

*Stephens (1921), p. 64.

All of our specimens have shown the characteristic of striking wildly in all directions (but with closed mouth) when disturbed.

HYPSIGLENA OCHRORHYNCHUS OCHRORHYNCHUS

<i>Coast</i>	<i>Foothills—Western</i>	<i>Mountains</i>
Cardiff (Z)	Witch Creek (J, W)	Cuyamaca (I)
Del Mar (Z)	Jamul (Z)	
Torrey Pines (Z)		<i>Desert Foothills</i>
Grantville (Z)		La Puerta (Y)
San Diego (I, Z)		
Bonita (Z)		

Our record of *Hypsiglena ochrorhynchus ochrorhynchus* shows nothing new as to range, as we have obtained specimens only from the coast and western foothill zones, whereas it has been previously recorded from these areas and the mountains. The San Diego Natural History Museum specimen from La Puerta constitutes an eastern record for this county. This snake has not yet been recorded from Imperial County but is found in Arizona.

THAMNOPHIS ORDINOIDES HAMMONDII

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Oceanside (W)	Pala (Z)	Oak Grove (II, V)
Carlsbad (II, V)	Bonsall (Z)	Agua Caliente (I, V)
Encinitas (Z)	Escondido (Z)	Rincon (Z)
Del Mar (W)	San Pasqual (Z)	Mesa Grande (Z)
Torrey Pines (Z)	Hodges Dam (Z)	Santa Ysabel (II, V, W)
Sorrento (Z)	Lakeside (W, Z)	Wynola (Z)
La Jolla (X, Z)	Flynn Springs (Z)	Witch Creek (J, U, W, Y, Z)
Rose Cañon (Z)	Lakeview (X)	Ballena (X, Z)
Orcutt (J, W, Z)	El Cajon (Z)	Ramona (Z)
(Grantville)	Murray Dam (Z)	Pine Valley (Y, Z)
Mission Valley (W, Z)	La Mesa (Z)	Alpine (Z)
San Diego (B, W, Y, Z)	Jamacha (Z)	Lee's Cañon (Y)
(Type Locality, with Fort Tejon)	Sweetwater Dam (P)	(South of Alpine)
National City (W)	Otay Dam (W, Z)	Glen Lonely (X, Z)
Chula Vista (Z)		Jamul (W)
San Ysidro (Z)		Morena Dam (Z)
		Dulzura (M, U)
		Potrero (Z)
		Campo (P, X)
<i>Mountains</i>	<i>Desert Foothills</i>	
Julian (Z)	5 mi. north of	
Cuyamaca (II, U, Y, Z)	Jacumba (Z)	
Laguna (J, W)		

Thamnophis ordinoides hammondi is plentiful from the ocean to the mountains, especially along the banks of streams or reservoirs. It is not uncommon in dryer situations. We have secured only one specimen on the eastern slope of the divide.

As an indication of the voracious appetite of these snakes, it may be mentioned that one moderate sized specimen, undisturbed at being caught and placed in a glass quart jar, ate thirty *Hyla regilla* as rapidly as they were handed in.

TANTILLA EISENI

<i>Coast</i>	<i>Foothills—Western</i>	<i>Desert Foothills</i>
San Diego (Z)	Witch Creek (O, Y)	La Puerta (Y)
	Campo (S, X)	

No specimen of *Tantilla eiseni* was brought to the Zoological Society collection during 1922 or 1923. The San Diego Natural History Museum specimen from La Puerta was ploughed out February 27th,

1923. As only three specimens have been reported from San Diego County to date this snake is either rare or difficult to find.* Two half-grown specimens were taken early in 1924 at points in the Inland Valleys and Mesas Zone in Lower California not far below the Boundary. Both were found a few inches below the surface of the ground. Mr. D. M. Smith who collected these specimens advises me that the Mexicans do not consider this snake uncommon but state that it comes out at night and is found in daylight only in the course of plowing or digging.

TRIMORPHODON VANDENBURGHI

Foothills—Western

Wildwood (Z)

A single specimen of the genus *Trimorphodon* taken in 1924 has been given the name *Trimorphodon vandenburghi*, new species.

Diagnosis: Similar to *T. lyrophanes*, from which it differs in having fewer ventral plates, and a higher number of dorsal blotches. The ground color is brown instead of gray and yellow as in *T. lyrophanes*. The dorsal blotches are darker, irregular and are only indistinctly split by the ground color. The chin shields of *T. lyrophanes* are immaculate; in *T. vandenburghi* they are spotted with brown.

Type Specimen: Adult male, No. 58172, Museum of the California Academy of Sciences, collected May 4, 1924, at Wildwood Ranch (elevation 1520 feet) near Ramona, San Diego County, California, by E. B. Woodworth and L. M. Klauber. (Fig. 3.)



Figure 3. *Trimorphodon vandenburghi*, New Species.

Description of Type Specimen: Scales in 23 rows, reducing to 16 by the loss of single rows, thus entailing even rows in portions of the body. Ventrals 228, anal entire, caudals 71 pairs. Rostral broader than high. Supralabials on the right 9, the fifth and sixth touching the eye, and seventh and eighth largest; on the left 8, the fourth and fifth touching eye, the sixth and seventh largest. Infralabials 12. Nasals separate, equal in size. Loreals 2-2, the anterior larger. A sub-loreal on each side behind the upper portion of the second supralabial.

*Two specimens from different points in San Diego City were received while these notes were in press.

Oculars right 3-3, left 2-3. Temporals right 2+3+5, left 2+3+6. Chin shields in two pairs, the anterior larger, the posterior separated by a scale row.

The body is slender with small neck and head very distinct, the latter widest across the temporal region. The eyes are prominent and protruding with vertical pupils. Total length 738 mm., length of tail 114 mm., ratio of tail to total length, .155.

The ground color above is brown, darkened on the sides by a multiplicity of black dots, which, however, are usually absent in the scale rows nearest the body blotches. Upon the ground color is superimposed a series (36 on the body, 14 on the tail) of roughly hexagonal chocolate brown blotches (the edges darker than the centers) which are occasionally split transversely with a short line of the ground color one scale wide. The dorsal blotches taper laterally into dark lines one or two scales wide, which engage the edges of the ventrals (usually of two adjacent plates). On the sides, interspersed between the main blotches there is a second row of dark brown marks beginning at the fifth to seventh scale rows and extending to the ventrals. The ventral color is a translucent white with yellow showing faintly through. Alternating with the body spots which touch the edges of the ventral plates there is on the ventral surface an irregular double series of spots formed by groups of fine dots.

The upper surface of the head is chocolate brown with a gray-brown lateral band across the front of the prefrontals and a second band across the center of the frontal and the supraoculars extending back across the temporals to the posterior supralabials. There is a Y-shaped dark gray mark with the apex at the posterior point of the frontal and the branches toward the neck.

The supralabials are white edged with brown. The lower chin surfaces are white with the outer edges of the anterior and the inner edges of the posterior infralabials edged with fine brown dots.

Remarks: This is apparently the first specimen of the genus *Trimorphodon* taken in California, the nearest previous specimens being *T. lyrophanes* from Southeastern Arizona and the Cape region of Lower California.

This specimen was found on a brush covered mountainside, thickly studded with large granite boulders. It was first noted under a large fragment which was pulled away from a boulder. When this was lowered back into place it escaped upward into an adjacent crevice from which it was extricated with some difficulty.

The specimen was observed in captivity for several weeks. The species is quite evidently nocturnal, as it was observed that the pupil of the eye was tightly closed, even in diffused light. When placed in a darkened box the snake gave evidence of good vision by avoiding or striking at foreign objects. It always attempted to escape by climbing, and when frightened progressed with the anterior part of the body raised from the ground. It would vibrate its tail rapidly when annoyed.

While the natural food of the species is unknown, it may be noted that this individual ate no less than seven *Xantusia henshawi* in three weeks and this night lizard is not uncommon in the Ramona district. It fed without constriction.

The eye in life was greatly protuberant, the iris being flecked with gray and green. The tongue was flesh colored with a red line upon either side.

CROTALUS CERASTES*Desert Foothills*

La Puerta (O, Y)

We have not had a specimen of *Crotalus cerastes* from San Diego County, although several have been brought in from along the San Diego-El Centro highway from beyond Mountain Spring. This snake is reported as fairly common in La Puerta Valley, and no doubt occurs in the desert areas of the county which are seldom visited.

CROTALUS EXSUL*Coast*

San Luis Rey (Z)
Oceanside (Z)
Olivenhain (Z)
Cardiff (Z)
Rancho Santa Fe (Z)
Torrey Pines (Z)
La Jolla (S, Z)
Pacific Beach (Z)
Mission Valley (Z)
San Diego (K, Y, Z)
Bonita (Y)
Chula Vista (Z)
Otay (Z)
San Ysidro (Z)

Inland Valleys

Deluz (I, V)
Bonsall (Z)
Twin Oaks (H, W)
Escondido (S, U, Z)
Bernardo (Z)
Poway (S, Z)
Foster (Z)
Miramar (Z)
Lakeside (Z)
Santee (Z)
El Cajon (Z)
Spring Valley (Z)
Jamacha (Z)
Sweetwater Dam (Z)
Sunnyside (Z)
El Nido PO (J)
(near Otay Dam)
Otay Dam (Z)

Foothills—Western

Rincon (Z)
Valley Center (Z)
Santa Ysabel (Y)
Witch Creek (J, W)
Ramona (Z)
Wildwood (Z)
Padre Barona (Z)
Viejas (Z)
Alpine (Z)
Glen Lonely (Z)
Jamul (Z)
Barrett Dam (Z)
Dulzura (S, U, Z)
Tecate (Z)

Mountains

Palomar (Z)

Desert Foothills

Dos Cabezas (Z)
Mountain Spring (J)
6 mi. north of
Jacumba (Z)

We have had a good series of our largest rattlesnake, *Crotalus exsul* from all the areas west of the mountains, but have not extended the known range as it had been reported previously from Mountain Spring. *C. exsul* is frequently found in piles of granite boulders especially during April and May. These rattlesnakes seem less excitable than most other species. Out of eight moderately large specimens taken at Glen Lonely, only one could be made to coil and rattle. There appears no doubt that *C. exsul* ranges almost if not quite to the floor of the desert.* In this connection, the taking of a specimen of *C. atrox atrox* of a distinctly reddish coloration, differing decidedly from Texas examples, near Dixieland, Imperial County, in 1923, may be recorded.

A pair of *C. exsul* was found mating April 13th, 1924.

CROTALUS MITCHELLII*Coast*

Point Loma (W)**

Inland Valleys

Lakeview (X, Z)

Foothills—Western

Warners (Z)
Valley Center (Z)
Ramona (Z)
Wildwood (Z)
Boulder Creek (Z)
Padre Barona (Z)
Potrero (Z)
Campo (S, X, Z)

Desert Foothills

Coyote Valley, 25 mi. east
from Oak Grove (II)
(Collins Valley)
La Puerta (Y)
Mountain Spring (E, Z)
Boulevard (S, X)
Jacumba (Z)
Hipass (Z)

Mountains

Palomar (Z)
Julian (Z)

Desert

Colorado Desert
(See below)

There is also a non-specific location "Colorado Desert, San Diego County" (J). This snake certainly occurs in the desert areas.

*U. S. National Museum Cat. No. 56282 is recorded from the "Colorado Desert" which may indicate either the Desert or Desert Foothill Zone.

**Dr. J. C. Thompson who collected this specimen writes me that this locality may be questioned until he has had the opportunity of checking his field book.

Crotalus mitchellii, while not so common as either *C. exsul* or *C. oreganus*, cannot be called rare, as we have a record of fourteen in two years. Our specimens have shown a variety of colorations, including gray-brown, salmon-red, and "granite". Gray-brown appears the more general color in this vicinity. Our collection and the Point Loma specimen in the National Museum extend the known range of these snakes in this territory considerably to the west, as Campo was the limit previously reported, whereas we have found them ranging well down to the base of the foothills on the western slope. Specimens from the west shoulder of Palomar and from Boulder Creek are also of interest as indicating that these snakes, in this county at least, inhabit areas relatively humid (annual rainfall at least 30 in.), and thus cannot be taken as Lower Sonoran life-zone indicators.* In disposition these rattlesnakes are the most nervous in this territory, maintaining a fighting spirit even after some days in captivity. They feed better in captivity than the other local species.

CROTALUS OREGANUS

<i>Coast</i>	<i>Inland Valleys</i>	<i>Foothills—Western</i>
Encinitas (Z)	Deluz (I, V)	Valley Center (Z)
Del Mar (Z)	Bonsall (I)	Santa Ysabel (S)
Torrey Pines (Z)	Escondido (Z)	Witch Creek (J, W)
La Jolla (S, U, Z)	Poway (Z)	Ramona (Z)
Rose Cañon (Z)	Miramar (Z)	Oakzanita (Z)
Pacific Beach (Z)	El Monte (Z)	Alpine (Z)
Orcutt (J, Z)	Flynn Springs (Z)	Japatul (Z)
(Grantville)	Santee (Z)	Buckman's (Z)
Mission Valley (Z)	El Cajon (Z)	Lyon's Valley (Z)
Chollas Heights (Z)	Lemon Grove (Z)	Dulzura (S, U, X, Z)
Ocean Beach (Z)	Otay Dam (Z)	Potrero (Z)
San Diego (S, U, X, Y, Z)		Campo (J, X, Z)
Encanto (Z)	<i>Mountains</i>	<i>Desert Foothills</i>
Point Loma (W, Z)	Julian (S, U, Z)	Banner (Z)
Paradise Valley (Z)	Midway bet. Cuyamaca and Julian (X)	La Puerta (**)
Chula Vista (Z)	Cuyamaca (II, Z)	Boulevard (S, W, X, Z)
San Ysidro (Z)	Cuyamaca Peak	
Tia Juana (Z)	(See below)	

Crotalus oreganus is our commonest and most widespread rattlesnake, although closely followed by *C. exsul*. Our record shows specimens from every zone except the desert. As is well known they range well up into the mountains; I once secured a specimen under the wooden observation platform at the top of Cuyamaca Peak, elevation 6515 ft., the highest point in the county. Our record in 1923 from the foothill zone is rather meagre, and can hardly be considered as giving a fair idea of the frequency of distribution in this zone. Our collection in no way extends the range as previously reported. In general, it is thought that *C. oreganus* is the predominant rattlesnake in the coast and mountain zones, while *C. exsul* leads in the area between.

The early spring months produce many juvenile specimens of *C. oreganus*; in 1924 64 per cent of the specimens taken in February, March and April were juveniles.

The coloration of *C. oreganus* varies greatly in this territory with gray and gray-brown predominating. Some of the largest specimens are quite black with perfect white diamonds one scale wide, differing from the smaller specimens which tend to have hexagonal marks.

*Hall and Grinnell (1919), p. 48. See also Schmidt (1922), p. 701.

**Authority of Frank Stephens who reports them more plentiful here than *C. cerastes*.

ALBINO SPECIMENS

During the past two years two albino snakes have been collected in San Diego County, a ratio of about one in four hundred normal specimens.

The first, a small albino *Pituophis catenifer annectens* was taken January 14th, 1923, at La Mesa (See Fig. 4). It was said to have been ploughed out. The spots normally brown were faint straw color, while those normally black were translucent and hence pink, as were the eyes also. The remaining areas were white. The eyes jerked involuntarily in strong light.

The second albino was a small specimen of *Lampropeltis californiae californiae* collected April 28th, 1924, in San Diego (see Fig. 5). In this specimen the yellow dorsal stripe and side markings were normal but the areas ordinarily dark brown were translucent white. The eyes were pink. The scutellation was apparently normal except that the parietals had a distorted appearance with the spurs of two miniature plates growing in their centers. The parietals of the gopher snake also were apparently abnormally wrinkled.



Figure 4. Albino *Pituophis catenifer annectens*.

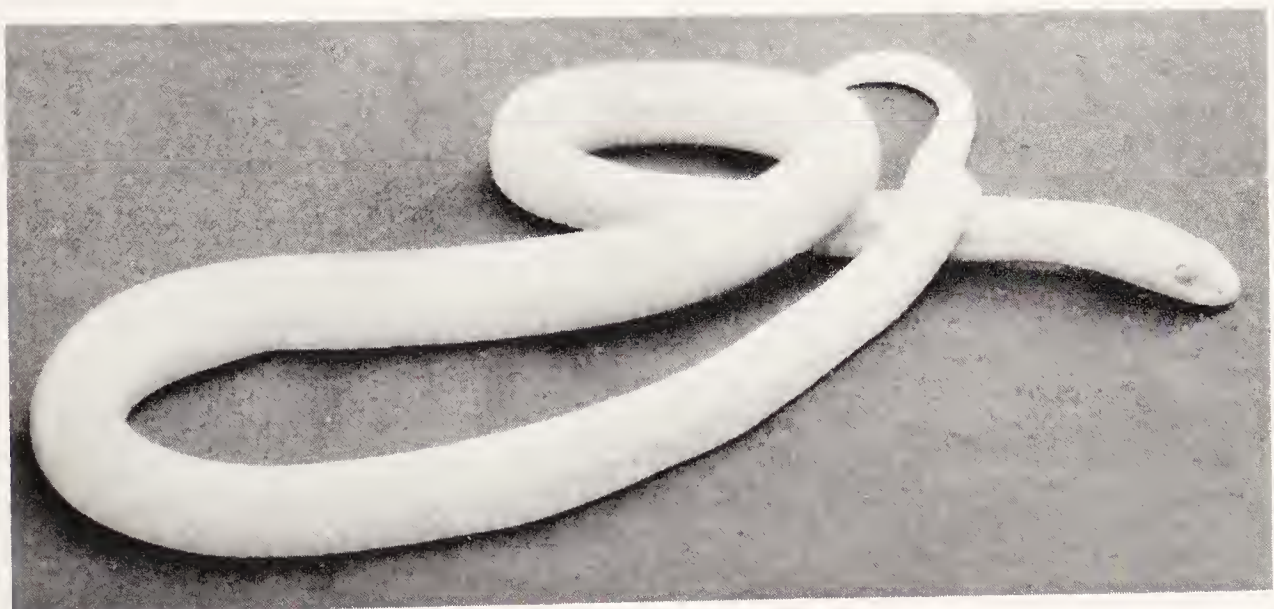


Figure 5. Albino *Lampropeltis californiae californiae*.

SELECTED LOCALITIES

It may be of interest to note the number of species taken in specific localities, where collecting has been particularly consistent, as shown in the following summary:

Collected in the Zoological Garden, San Diego	Collected by J. R. Slevin at Campo	Collected or observed by Frank Stephens at La Puerta
Siagonodon humilis	Coluber flagellum piceus	Lichanura roseofusca
Diadophis amabilis similis	Coluber lateralis	Coluber flagellum piceus
Coluber flagellum piceus	Salvadora hexalepis	Arizona elegans occidentalis
Coluber lateralis	Arizona elegans occi- dentalis	Pituophis catenifer annectens
Pituophis catenifer annectens	Pituophis catenifer annectens	Lampropeltis getulus boylii
Lampropeltis c. californiae	Lampropeltis c. californiae	Rhinocheilus lecontei
Lampropeltis getulus boylii	Lampropeltis getulus boylii	Sonora occipitalis
Thamnophis ordinoides	Rhinocheilus lecontei	Hypsiglena o. ochrorhynchus
Thamnophis ordinoides hammondii	Thamnophis ordinoides hammondii	Tantilla eiseni
Crotalus exsul	Tantilla eiseni	Crotalus cerastes
Crotalus oreganus	Crotalus mitchellii	Crotalus mitchellii
	Crotalus oreganus	Crotalus oreganus

The area occupied by the Zoological Garden in Balboa Park, San Diego, being frequented by Zoo employees and others interested in taking specimens, should naturally yield a greater number of species than other similar areas in the Coast Zone. Additional species may be expected from this area, especially *Salvadora hexalepis*, *Rhinocheilus lecontei* and *Hypsiglena ochrorhynchus ochrorhynchus*.

J. R. Slevin, Assistant Curator of Herpetology, California Academy of Sciences, collected at Campo for two months during the early summer of 1915. His list is unusually complete for so short a trip; he was fortunate in taking several rare species notably *Arizona elegans occidentalis* and *Tantilla eiseni*. The only common species which may be expected from this locality which he did not take are *Lichanura roseofusca*, *Diadophis amabilis similis* and *Crotalus exsul*.

Frank Stephens has collected at La Puerta for a number of years. Of the twenty-three species occurring in the county, eighteen have been recorded on the eastern side of the divide and of these twelve have been noted at La Puerta by Stephens, the six missing species being *Siagonodon humilis*, *Coluber lateralis*, *Phyllorhynchus decurtatus*, *Lampropeltis californiae californiae*, *Thamnophis ordinoides hammondii*, and *Crotalus exsul*. On the other hand, *Hypsiglena ochrorhynchus ochrorhynchus* and *Tantilla eiseni* have as yet been reported from no other locality east of the divide and were it not for this consistent collecting, might have been thought absent from this area. The only San Diego County record of *Crotalus cerastes* is from this locality.

CONCLUSION

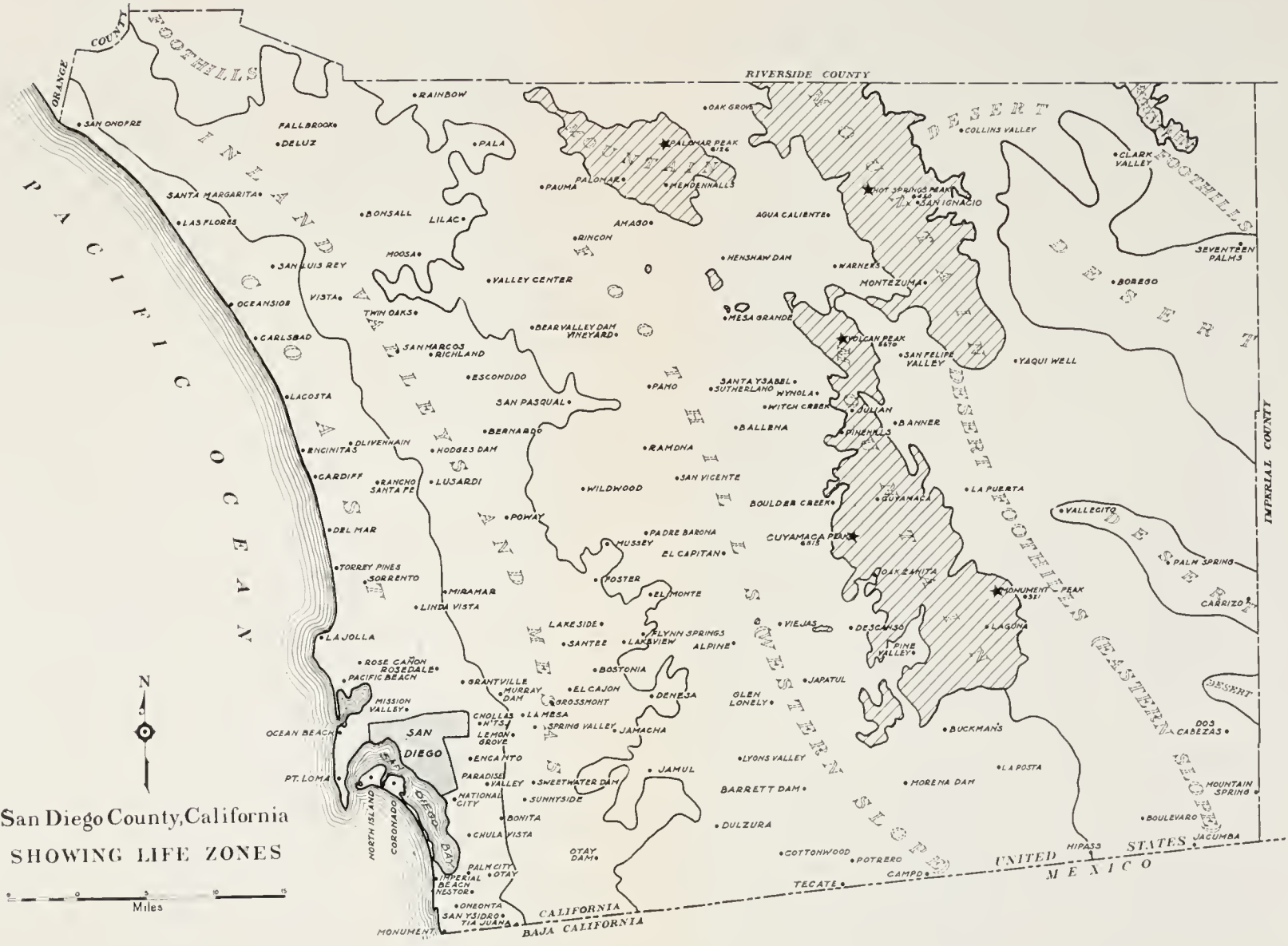
Table III summarizes the zonal distribution as indicated by the data at hand. The Imperial County records are given as an indication of what may be expected in the case of certain species not yet recorded from the desert area.

It is evident that the ranges of some species are still undetermined and it is hoped that future collections will more clearly define the limits, particularly east of the divide.

Table III—Showing Zonal Distribution of Species from Records to Date

Species	Coast	Inland Valleys & Mesas	Foothills, Western Slope	Moun- tains	Foothills, Desert Slope	Desert	Imperial County
Stagonodon humilis	x	x	x	x	x	x	x
Lichanura roseofusca	x	x	x		x	*	*
Diadophis amabilis similis	x	x	x				
Coluber constrictor mormon	x	x	x	x			
Coluber flagellum piceus	x	x	x		x	x	x
Coluber lateralis	x	x	x		x		
Salvadora hexalepis	x		x				x
Phyllorhynchus decurtatus					x		
Arizona elegans occidentalis	x		x		x	x	†
Pituophis catenifer amnectens	x	x	x	x	x		†
Lampropeltis c. californiae	x	x	x	x	x		
Lampropeltis getulus boylii	x	x	x	x	x	x	†
Lampropeltis multicincta				x			
Rhinocheilus lecontei	x		x		x		
Sonora occipitalis		x			x	x	x
Hypsigena o. ochrorhynchus	x		x	x	x		
Thamnophis ordinoides							
hammondii	x	x	x	x	x		
Tantilla eiseni	x		x		x		
Trimorphodon vanden- burghi			x				
Crotalus cerastes					x		x
Crotalus exsul	x	x	x	x	x	*	
Crotalus mitchellii	?	x	x	x	x		x
Crotalus oreganus	x	x	x	x	x		

*General location; not specific.
†Pituophis catenifer deserticola.
‡Lampropeltis getulus yumensis.



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